

IN THE CLAIMS:

- 1 1. (Currently amended) A data collection apparatus, comprising:
- 2 a sensing unit ~~for attaching to a structure or live subject~~ for sensing a
- 3 parameter ~~of the structure or live subject~~, ~~said sensing unit~~ comprising a
- 4 sensor, a first data storage device, a first receiving device, and a first
- 5 transmitting device, said first data storage device for storing data from said
- 6 sensor, said first transmitting device for transmitting data derived from
- 7 said sensor;
- 8 a control unit separable from said sensing unit, said control unit
- 9 comprising a data receiving device, a second transmitting device, and a
- 10 second data storage device different from said first storage device, said
- 11 data receiving device to receive data transmitted from said data sensing
- 12 unit, said second data storage device for storing said data received from
- 13 said sensing unit wherein said sensing unit is configured so a real time
- 14 signal from said control unit to said sensing unit can trigger a change in
- 15 one or more of the following: (a) sensor data handling, (b) sensor data
- 16 collection, and (c) sensor data storage in said sensing unit, and (d) sensor
- 17 data transmission from said sensing unit; and
- 18 a triggering device ~~for modifying the storing of data being stored to said~~
- 19 ~~first data storage device or for initiating transmission of data from said~~
- 20 ~~sensing unit to said control unit, wherein said triggering device is~~
- 21 ~~controlled by a real time change in information about the structure or live~~
- 22 ~~subject.~~

- 1 2. (Currently amended) The apparatus as recited in claim 1, wherein said sensor
2 comprises an accelerometer, a displacement sensor, a strain gauge, a pressure
3 gauge, a thermometer, a flow monitor, a heart monitor, an EKG, an EMG, an
4 EEG, a blood monitor, a force gauge, a humidity monitor, a growth rate monitor, a
5 ripeness monitor, a light intensity gauge, a radiation detector, a chemical detector,
6 a corrosion detector, or a toxic monitor.
- 1 3. (Currently amended) The apparatus as recited in claim 2, wherein said sensor
2 comprises an array of said accelerometers.
- 1 4. (Currently amended) The apparatus as recited in claim 2, wherein said sensor
2 comprises a linear ~~or angular~~ accelerometer.
- 1 5. (Currently amended) The apparatus as recited in claim 2, wherein said sensor
2 comprises a resistive accelerometer ~~or a piezoelectric~~ accelerometer.
- 1 6. (Original) The apparatus as recited in claim 1, wherein said sensor is for detecting
2 vibration.
- 1 7. (Original) The apparatus as recited in claim 1, wherein said sensing unit is for
2 attaching to an architectural structure or to a vehicle.
- 1 8. (Currently amended) The apparatus as recited in claim 1, wherein said ~~data~~
2 sensing unit is for wearing by ~~the~~ a live subject.
- 1 9. (Currently amended) The apparatus as recited in claim 1, wherein said ~~data~~
2 sensing unit is for implanting in ~~the~~ a live subject.

- 1 10. (Currently amended) The apparatus as recited in claim 9, further comprising a
2 hermetically sealed housing, wherein said ~~sensor~~ sensing unit is located in said
3 sealed housing.
- 1 11. (Original) The apparatus as recited in claim 10 wherein said housing comprises
2 titanium or ceramic.
- 1 12. (Currently amended) The apparatus as recited in claim 10, wherein said sensing
2 unit further comprises an antenna, wherein ~~an~~ said antenna extends outside said
3 housing and is connected ~~to a receiver or transmitter~~ within said housing through
4 a penetration in said housing.
- 1 13. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit further comprising comprises a microprocessor.
- 1 14. (Currently amended) The apparatus as recited in claim 13, wherein said
2 microprocessor is ~~in said sensor unit and wherein~~ connected to said first storage
3 device, said first transmitting device, and said first receiving device is connected
4 to said receiver and to said sensor through said microprocessor.
- 1 15. (Currently amended) The apparatus as recited in claim 13, wherein said
2 microprocessor comprises ~~said a~~ triggering device for triggering said change.
- 1 16. (Currently amended) The apparatus as recited in claim 1, wherein said ~~sensor~~
2 sensing unit further comprises a power supply.
- 1 17. (Currently amended) The apparatus as recited in claim 16, wherein said power
2 supply comprises one or more from the group consisting of a rechargeable battery
3 or and a fuel cell.

- 1 18. (Original) The apparatus as recited in claim 17, further comprising a circuit for
2 recharging said battery by inductive coupling.
- 1 19. (Original) The apparatus as recited in claim 18, further comprising a hermetically
2 sealed housing, wherein said sensor and said circuit for recharging is in said
3 housing and said coupling is through said housing.
- 1 20. (Currently amended) The apparatus as recited in claim 18, wherein said circuit for
2 recharging is in the said housing and an antenna for said the coupling is located
3 outside the said housing.
- 1 21. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit further first receiving device comprises an RF receiver for receiving a said
3 real time signal from said triggering device.
- 1 22. (Currently amended) The apparatus as recited in claim 1, wherein said first
2 transmitting device is includes an RF transmitter.
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1 23. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit includes a clock, wherein said control unit includes a time reference, and
3 wherein said second transmitting device is capable of sending a timing signal to
4 said sensor unit for synchronizing said clock to said time reference.
- 1 24. (Currently amended) The apparatus as recited in claim 23, wherein a plurality of
2 sensing units includes clocks, wherein said timing signal is for synchronizing
3 synchronizes said clocks on a plurality of said sensing units sensors or for
4 synchronizing a sensor with another apparatus.

1 25. (Original) The apparatus as recited in claim 23, wherein said first storage device is
2 connected to receive and record said timing signal.

1 26. (Original) The apparatus as recited in claim 1, wherein said first data storage
2 device continually records.

1 27. (Original) The apparatus as recited in claim 1, wherein said first storage device is
2 controlled by data received by said sensor.

1 28. (Original) The apparatus as recited in claim 27, wherein when said data received
2 by said sensor reaches a threshold, data in said first storage device is retained.

1 29. (Original) The apparatus as recited in claim 28, wherein said retained data
2 includes data received after said sensor reaches said threshold.

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1 30. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit further comprising includes a feedback device for adjusting said parameter
3 based on said data.

1 31. (Cancel)

1 32. (Currently amended) The apparatus as recited in claim 30, further comprising a
2 sensor capable of detecting excessive vibration, wherein said feedback device is
3 an active damping element to reduce vibration in response to measured excessive
4 vibration.

1 33. (Cancel)

1 34. (Original) The apparatus as recited in claim 1, wherein said second data storage
2 device comprises a computer.

1 35. (Original) The apparatus as recited in claim 1, wherein said control unit further
2 comprises a device to signal a user that data exceeding a preset threshold has been
3 reached.

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1 38. (Currently amended) The apparatus as recited in claim 1, further comprising a
2 plurality of sensing units, wherein said ~~control unit is capable of sending second~~
3 transmitting device is connected to transmit address information to said sensor
4 sensing units ~~unit~~ to activate all of said sensing units, to activate specific ones of
5 said sensing units, or to communicate with an individual sensor sensing unit of a
6 said plurality of sensor sensing units.

- 1 39. (Currently amended) A method of collecting data, comprising the steps of:
- 2
- 3 a) providing a sensing unit ~~for attaching to a structure or live subject~~
- 4 for sensing a parameter ~~of the structure or live subject~~, said sensing
- 5 unit comprising a sensor, a first data storage device, a first
- 6 receiving device, and a first transmitting device, said first data
- 7 storage device for storing data from said sensor, said first
- 8 transmitting device for transmitting data derived from said sensor;
- 9 b) providing a control unit separable from said sensing unit, said
- 10 control unit comprising a second data receiving device and a
- 11 second data storage device different from said first storage device,
- 12 said second data receiving device to receive data transmitted from
- 13 said data sensing unit, said second data storage device for storing
- 14 said data received from said sensing unit; and
- 15 c) transmitting a real time signal to said first receiving device to
- 16 trigger a change in one or more of the following: sensor data
- 17 handling, sensor data collection, and storage of sensor data in said
- 18 first sensing unit; and
- 19 d) triggering transmitting data from said first sensing unit to said data
- 20 receiving device.
- 21 ~~c) providing a trigger signal for modifying the storing of data being~~
- 22 ~~stored to said first data storage device or for initiating transmission~~
- 23 ~~of data from said sensing unit to said control unit, wherein said~~
- 24 ~~trigger signal is a real time change in information about the~~
- 25 ~~structure or live subject.~~

1 40. (Currently amended) A data collection apparatus, comprising a network of
2 addressable sensing units and a control unit, for attaching to at least one structure
3 or at least one live subject, said sensing units for sensing a parameter of the at
4 least one structure or at least one live subject, said sensing units each comprising a
5 sensor, an addressable microprocessor, a first data storage device connected to
6 said microprocessor, a first transmitting device and a first receiving device,
7 wherein said sensing units are configured so a real time signal from said control
8 unit to said sensing unit can trigger a change in one or more of the following: (a)
9 data handling, (b) data collection, and (c) data storage in said sensing unit, and (d)
10 sensor data transmission from said sensing unit.

1 41. (Currently amended) The apparatus as recited in claim 40, ~~further comprising a~~
2 wherein said control unit is separable from said sensing units, further wherein said
3 control unit comprising a second transmitter, comprises a second transmitter, a
4 second receiver, and a second data storage device for storing data received from
5 said plurality of sensing units.

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1 42. (Currently amended) The apparatus as recited in claim 41, wherein ~~said control~~
2 unit can transmit second transmitter is connected to transmit address information
3 to activate all of said sensing ~~sensor~~ units, or to activate specific ones of said
4 sensing sensor units, or to activate one of said sensing units.

1 43. (Currently amended) The apparatus as recited in claim 41, wherein said control
2 unit can provide an address to query each ~~sensor~~ sensing unit individually.

1 44. (Previously presented) The apparatus as recited in claim 41, wherein said second
2 transmitting device is for transmitting a timing signal for synchronizing said
3 plurality of sensing units.

1 45. (Currently amended) The apparatus as recited in claim 40, wherein said
2 microprocessor can do one or more of the following: (a) query, (b) activate, or and
3 (c) send timing information to each sensor of said sensing unit individually, or to
4 and (d) activate all sensors at once.

1 46. (Currently amended) The apparatus as recited in claim 40, wherein said sensing
2 units further comprise a signal conditioner, an A/D converter, and a clock for
3 microprocessor functions and to track time.

1 47. (Currently amended) The apparatus as recited in claim 40, wherein said first data
2 storage device is connected to said first transmitting device for transmitting data
3 to said control unit when a signal triggering transmission is received.

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1 48. (Previously presented) The apparatus as recited in claim 40, wherein said first
2 transmitter and said second transmitter are wireless transmitters.

1 49. (Currently amended) The apparatus as recited in claim 40, wherein each said
2 sensing unit further comprises comprising a triggering device for providing said
3 triggering modifying the storing of data being stored to said first data storage
4 device or for initiating transmission of data from said plurality of sensors to said
5 control unit, wherein said triggering device is controlled by a real time change in
6 information about the structure or live subject.

1 50. (Currently amended) A data collection apparatus, comprising:

2 a plurality of sensing units ~~for attaching to at least one structure or at least~~
3 ~~one live subject, said sensing units for sensing a parameter of the at least~~
4 ~~one structure or at least one live subject, said sensing units each~~
5 comprising a sensor, a first data storage device, a first transmitting device
6 and a first receiving device; and

7
8 a control unit separable from said sensing units, said control unit
9 comprising a second transmitting device, a second receiving device, and a
10 second data storage device, for transmitting a timing signal for
11 synchronizing said plurality of sensing units, a second receiver, and a said
12 second data storage device for storing data received from said plurality of
13 sensing units, wherein each of said sensing units is configured so a real
14 time signal from said control unit to said sensing unit can trigger
15 transmitting data derived from said sensor by said first transmitting device.

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1 51. (Currently amended) The apparatus as recited in claim 50, wherein said sensor
2 units are each further comprise an addressable microprocessor, and wherein said
3 ~~control unit~~ second transmitting device is further for transmitting timing and
4 address information to said sensor units.

1 52. (Currently amended) The apparatus as recited in claim 51, wherein said address
2 information is to activate all sensor units or to activate specific sensor units ~~based~~
3 ~~on the address of the individual sensor unit.~~

1 53. (Currently amended) The apparatus as recited in claim 51, wherein said control
2 unit can provide an address to query each sensor unit individually.

1 54. (Currently amended) The apparatus as recited in claim 50 51, wherein said sensor
2 units each further comprise a microprocessor plurality of sensors wherein said
3 microprocessor can do one or more of the following: (a) query[[,]] each of said
4 sensors sensor individually (b) activate, or send timing information to each of said
5 sensors sensor individually, or to (c) query all said sensors at once and (d) activate
6 all said sensors at once.

1 55. (Cancel)

1 56. (Currently amended) The apparatus as recited in claim 54 51, wherein said sensor
2 units each further comprise a signal conditioner[[,]] and an A/D converter, and a
3 clock.

1 57. (Currently amended) The apparatus as recited in claim 54 51, wherein said
2 microprocessor controls storage to said first data storage device.

1 58. (Currently amended) The apparatus as recited in claim 50, wherein said first
2 transmitting device can transmit data from said first storage device to said control
3 unit.

1 59. (Currently amended) The apparatus as recited in claim 59 50, wherein said second
2 data receiving device and second data storage device are for receiving and storing
3 said data transmitted to said control unit.

1 60. (Currently amended) The apparatus as recited in claim 50, wherein said first
2 transmitter transmitting device and said second transmitter transmitting device are
3 wireless transmitters.

- 1 61. (Currently amended) The apparatus as recited in claim 50, further comprising a
2 triggering device for ~~providing said triggering modifying the storing of data to~~
3 ~~said first data storage device or for initiating transmission of data from said~~
4 ~~sensing unit to said control unit, wherein said triggering device is controlled by a~~
5 ~~real time change in information about the structure or live subject.~~
- 1 62. (New) The apparatus as recited in claim 50, wherein each said sensing unit is
2 configured so data from said sensor can trigger transmission from said sensing
3 unit to said control unit.
- 1 63. (New) The apparatus as recited in claim 62, wherein said each said sensing unit is
2 configured to trigger transmission from said sensing unit to said control unit once
3 sensor data exceeds a threshold value.
- 1 64. (New) The apparatus as recited in claim 1, further comprising a host computer,
2 wherein said control unit is connected to said host computer.
- 1 65. (New) The apparatus as recited in claim 1, wherein a user operating on said host
2 computer can send a signal to trigger data collection.
- 1 66. (New) The apparatus as recited in claim 1, further comprising a triggering device
2 for providing said triggering.
- 1 67. (New) The apparatus as recited in claim 1, wherein said sensing unit is configured
2 so data from said sensor can trigger transmission from said sensing unit to said
3 control unit.

- 1 68. (New) The apparatus as recited in claim 67, wherein said sensing unit is
2 configured to trigger transmission from said sensing unit to said control unit once
3 sensor data exceeds a threshold value.
- 1 69. (New) The apparatus as recited in claim 2, wherein said sensor comprises an
2 angular accelerometer.
- 1 70. (New) The apparatus as recited in claim 2, wherein said sensor comprises a
2 piezoelectric accelerometer.
- 1 71. (New) The apparatus as recited in claim 13, wherein said microprocessor
2 comprises a triggering device for initiating transmission of data from said sensing
3 unit to said control unit, wherein said triggering device is controlled by a real time
4 change in said data.
- 1 72. (New) The apparatus as recited in claim 23, wherein said timing signal
2 synchronizes clocks on said sensing unit and on another apparatus.
- DI 1 73. (New) The method as recited in claim 39, wherein in said triggering step (d) said
2 triggering transmitting data step is provided by a trigger signal generated within
3 said sensing unit.
- 1 74. (New) The method as recited in claim 39, wherein in said triggering step (d) said
2 triggering transmitting data step is provided by a trigger signal received from said
3 control unit.
- 1 75. (New) The apparatus as recited in claim 40, wherein each said sensing unit is
2 configured so data from said sensor can trigger transmission from said sensing
3 unit to said control unit.

DI 1 76. (New) The apparatus as recited in claim 75, wherein said each said sensing unit is
2 configured to trigger transmission from said sensing unit to said control unit once
3 sensor data exceeds a threshold value.
